



THE FRAMINGHAM HEARTBEAT



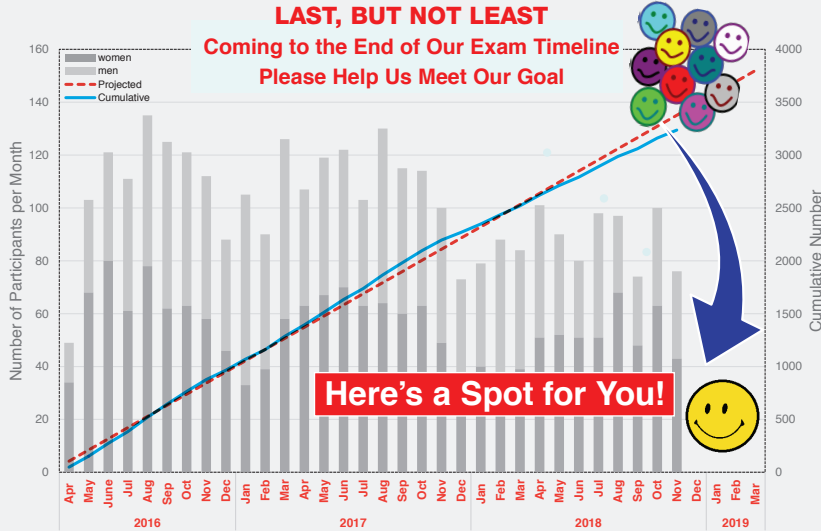
The Framingham Heart Study is a project of the National Heart, Lung, & Blood Institute & Boston University.

Winter 2019

Generation 3, New Offspring Spouse and Omni 2 Exam 3 Attendance

LAST, BUT NOT LEAST

**Coming to the End of Our Exam Timeline
Please Help Us Meet Our Goal**



LAST CHANCE - PLEASE CALL!

FHS tracks Exam 3 attendance every month and aims to reach its end goal.

There are only a few months left to go.

If you are in Generation 3, NOS or in Omni Group 2 and did not yet set an appointment for Exam 3, please call Maureen at (800) 536-4143 or Paulina at (888) 689-1682 now and find a date that suits you!

FHS PARTICIPANTS ARE STARS

Gina Galvani at 111 years old, participated in FHS for 70 years, so far. Recently, Julie flew in from Virginia and David drove from North Carolina to attend Exam 3.



Gina Galvani at Birthday Celebration

Julie Glennon at FHS

David Tomasetti at FHS

So far over 3200 stars from near and far have attended Exam 3

**Please come in for Exam 3
We are ready and waiting for you!**



Patrice, Emily, Maureen & Meme

Top image: Left to right, FHS Leadership: Martin Larson, BU FHS Co-PI; Daniel Levy, NHLBI FHS Director; Karen Antman, Provost and Dean BUSM; Vasan Ramachandran, BUSM FHS PI and Director; Phylliss Sholinsky and Brian Kit, NHLBI FHS Project Officers; Joanne Murabito, BU FHS Co-PI; Emelia Benjamin, BU, FHS Executive Committee; and Andrew Johnson, NHLBI, FHS Executive Committee

STATE *of the* STUDY

PROGRESS REPORT FROM DR. VASAN RAMACHANDRAN

I am pleased to share with you that 2018 was a very exciting year for the Framingham Heart Study (FHS) with continued growth and productivity. The third examination of the Third Generation (Gen 3), New Offspring Spouse (NOS), and Omni 2 cohorts has been proceeding very well (we are 85% done!), in parallel with the continued surveillance of all three generations and the Omni cohorts of FHS. You and the Research Center and recruitment staff (along with the rest of the FHS staff and investigators) have toiled hard to get us to this milestone - we are looking forward to completing the rest of the examination cycle soon, again with your collaboration! The FHS data management group continues to provide de-identified FHS data sets to NHLBI and NCBI for web posting, providing an extremely valuable resource for outside researchers. About **200** scientific papers were published last year, most in high-impact journals, all made possible due to your participation!

Specific Highlights of 2018:

We celebrated our 70th year of youth (!) at FHS along with many of you in October – we were honored to host you at the FHS open house and at the celebration at the Sheraton Hotel. We had extensive and laudatory local and national media coverage that recognized your sustained participation in the FHS and continued contributions to science! Do visit our website (<https://www.framinghamheartstudy.org/>) to see the links to the press coverage.

Meanwhile, our ancillary studies have continued to thrive. ***Several thousand FHS participants have contributed to our whole genome sequence (WGS) TOPMED project. We are anticipating exciting scientific reports from this project over the next few years.*** The reporting of genetic results for select participants with pathological variants is proceeding smoothly.

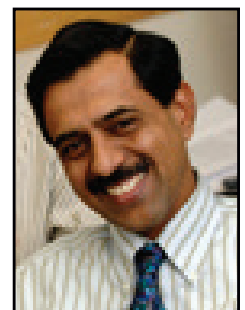
We are in advanced planning for the next FHS contract that is tentatively scheduled to start later this year. ***We are formulating the tenth examination of the Offspring cohort and fifth examination of the Omni 1 cohort that will likely start in the late summer or early fall of 2019 under a new FHS contract.*** We are very excited about a series of innovative grant proposals that will launch the start of this next examination cycle and define its content. Please stay tuned for information on details of the Offspring/Omni 1 exam in early 2019.

It is a real honor and true privilege to work with and serve you all!

Sincerely yours,



Vasan S. Ramachandran, M.D., DM, FACC
The Framingham Heart Study, Boston University School of Medicine
Principal Investigator and BU Director, The Framingham Heart Study



How Your Regular MD Exams and FHS Research Exams Differ

Your regular check-up with your physician is to take care of **your health!** Your generous visits to the FHS research exams greatly improves health worldwide over time. Some of the tests and measures included in FHS research exams may seem like tests people get at their doctors' offices. But there are very important differences. Please look at the table below so that you understand the differences.

How Your Regular MD Exams and FHS Research Exams Differ		
	Your Exam with Your MD	FHS Research Exams
Purpose	To keep YOU healthy and treat your medical problems	To learn about health and disease in populations
Frequency	At least once a year, or more often when you are sick	Once every 5-6 years!
Encounter	Medical facility with a licensed health care provider such as your PCP	FHS Research Center interview with medical professionals who are not your health care providers
Contents	Standard and customized clinical tests aimed at maintaining YOUR health care	Research tests and questions for epidemiological data collection and research studies focused on scientific research questions
Results	Recommendations and treatments for improving YOUR health	New scientific research findings for improving public health
Reports to you	On tests designed for YOUR care and as soon as possible	On a small number of research tests, often after extended data processing and cleaning, when available and approved
Value	BETTER HEALTH FOR YOU SEE YOUR PERSONAL DOCTOR REGULARLY!	A GREAT CONTRIBUTION YOU MAKE FOR IMPROVING PUBLIC HEALTH THANK YOU! THANK YOU! THANK YOU!



How we ensure use of best practices at FHS. The FHS is organized to be monitored regularly by several boards and committees. Michelle St. Paul (photo left) is the FHS liaison to **the Institutional Review Board of Boston University**. **The FHS Executive Committee** and **the NHLBI Observational Monitoring Board** review proposals for new FHS research. **The FHS Quality Control Committee** makes sure new FHS data is conforming to high standards for each set of measures. **The FHS Ethics Advisory Board** is composed of participants, local physicians, lawyers, clergy and chaired by Elizabeth Hohmann, MD, all of whom volunteer to meet and consider upcoming research plans from the perspective of best practice for safety, security, and protection of participants.

FHS Celebrated its 70th Anniversary in 2018

Here are a few highlights from the events on October 26, 2018, when FHS participants, faculty, staff and dignitaries recounted the proud history and exciting future of FHS. See videos, photos and much more news about the 70th on the FHS Website, www.framinghamheartstudy.org/fhs-about/fhs-70th-anniversary

At the Sheraton Framingham Conference Center



Featured from Left to Right – Rev. Debbie Clark, Congresswoman Katherine Clark, Mayor Yvonne M. Spicer, John Galvani, Vasan Ramachandran, Daniel Levy, Dean Karen Antman, State Representative Jack Lewis, Brian Kit and Phylliss Sholinsky



(L) Mayor Yvonne M. Spicer
(R) U.S. Congresswoman Katherine Clark

At the FHS Open House



Christopher McDonough shows visitors a Fibroscan



Dr. Martin Larson, FHS Co-PI and Senior Statistician



Dr. Hugo Aparicio, Neurologist at FHS



Neuropsychology Research Assistants and Guest



FHS Principal Investigator and BU Director Dr. Vasan Ramachandran and Participants

HIGH SCHOOL SENIORS: ENTER THE 2019 DAWBER ESSAY CONTEST

President, John Galvani and the board members of the Friends of FHS announced two scholarships for 2019 based on an essay contest: a \$1,000 Award and a \$500 Award.

Eligibility: Open to children, step-children, and grandchildren of FHS participants. Applicants must be graduating from high school this year and planning to attend college in the fall 2019.

To apply, only two items are needed: an email with the applicant's name, address, telephone number, and college and career plans (roughly a two-sentence description) and a 1,000-word essay titled ***What it means to be a participant in medical research in the Framingham Heart Study.*** Applicants may tell a story, conduct an interview, or pursue any angle of interest. Please fact-check and proofread before submitting. Email the essay as an attachment to Emily Manders (emanders@bu.edu) by Wednesday, April 17, 2019. We will confirm receipt of all essays within one business day. If you don't receive a confirmation, please call (508) 935-3443. The Friends will review the essays and notify recipients by May 15, 2019. Recipients will be invited to accept their awards at the FHS research center.



2018 Scholarship Winner: Patrick Hanly

*L - R: Dr. Daniel Levy, NHLBI Director, Framingham Heart Study;
John Galvani, President, Friends of Framingham Heart Study;
Patrick Hanly; Peter Allen, Treasurer, Friends of Framingham Heart Study*



2018 Runner-Up: Sophie Verra

*L - R: Peter Allen, Treasurer, Friends of Framingham Heart Study;
Dr. Daniel Levy, NHLBI Director, Framingham Heart Study; Sophie Verra;
John Galvani, President, Friends of Framingham Heart Study*



A Message From the Friends of the Framingham Heart Study

Greetings, fellow participants. With funds donated to the Friends of the Framingham Heart Study (FFHS), we provide support for items and activities at FHS such as conference grants, audio-visual equipment, annual scholarships to high school graduates, and the ECG cards sent to participants after exam visits. With your help, we'll be able to do more to support FHS in its ground-breaking research.

The Friends of the FHS is a 501(c) (3) nonprofit organization supported solely by donations. We invite you to contribute a personal donation or one in the memory of, or in honor of, a family member or friend. No donation is too small or too large and all are tax deductible.

To make a donation:

please mail a check made out to:
"Friends of the FHS." Address it to:

Patti Rose
ATTN: Friends of the FHS
73 Mt. Wayte Ave., Suite 2
Framingham, MA 01702

FROM THE SCIENCE DESK

EXAM 3 UPDATE

How Hi-Tech and YOU make FHS more powerful than ever

Let's compare a paper folded road map to today's GPS. A good road map gave us a lot of useful information and helped us find our way from place to place. Now GPS gives us the basic information PLUS much more detail, even in 3-D if we want. Similarly, when you come to FHS for current core and ancillary studies, you are providing your updates to standard FHS tests and measures PLUS a host of new hi-tech data. Scientists all over the world look to FHS as a source of the latest data, lab specimens and images for research on the complexities of human biology related to health and disease. **Here are examples of new technologies used by FHS currently at Exam 3.**

How Fit Is Framingham?

The current FHS Exam includes a **state-of-the-art cardiopulmonary fitness evaluation**. Historically, population studies have provided information about how **measurements made at rest** can help to predict future cardiovascular disease. **Measurements acquired during exercise** provide new information that is not available with resting measurements alone. The FHS exercise facility contains special equipment to literally measure the contents of every breath along with hundreds of small molecules circulating in the blood stream that change in response to exercise. We hope to learn from these new data how individual's fitness responses to exercise confers cardiovascular health benefits.



Actical Physical Activity Monitor

Did you know that the time you spend being active today can **influence your risk for developing heart disease, stroke and dementia in the future?** We are studying these specific relationships with new data from the Actical physical activity monitor. Third Generation, New Offspring Spouse and Omni 2 participants are offered this small device to be worn on a belt for eight days. When you mail the device back to FHS, the huge amount of stored data from your activities is uploaded to a computer. The collection of data from many FHS participants over time can be studied for patterns that lead to new insights for improving public health.

eFHS (electronic Framingham Heart Study)

An FHS participant may visit the Research Center for an exam once every 4 to 8 years. Participants spend the remaining 6000+ hours/year elsewhere. We are using mobile devices to obtain “real world” views of participant health and behaviors in everyday life through funding from the Robert Wood Johnson Foundation. We designed a **smartphone app called eFHS** that sends short health surveys every three months to collect new information about participants' cardiovascular health. With a smartphone, one can download the app at FHS and use it in daily life with a digital BP cuff and watch to collect blood pressure, heart rate, and step count data. Also included in this study is a **randomized controlled trial to evaluate different types of e-messages** to understand what engages participants to use the devices over the long-term. Soon we will be able to compare the new data collected from the mobile devices to standard data collected in the Research Center on the same people, providing the research and clinical communities with better understanding of the value of data collected by mobile devices.

Fibroscan is an ultrasound study of your liver fat and stiffness. In only five minutes during Exam 3, we can get an image of your liver. We are beginning to learn from this data how the presence of fat and liver stiffness may contribute to the development of diabetes and cardiovascular diseases.



The Mighty Microbiome

In October 2016, FHS began research to learn more about the microbiome—that powerful community of bacteria that live on us and in us (e.g., on our skin and in our mouth and/or gut). Scientists have found that people with certain diseases have different kinds of bacteria in their gut compared to healthy people. We hope that you will agree to contribute to the power of this microbiome study by completing your stool collection kit. ***If you need a new Microbiome kit, please contact Jared Zucker at 508-663-4052 or email him at jmz@bu.edu***

Bone Study

The FHS osteoporosis team has installed world-class new scanners for Exam 3. Scans of arms and legs now show the thickness of the outer layer of bones as well as the inner structures. The whole body scanner shows individualized images of bones along with muscles and fat deposits. The team is already beginning to understand the interactions of these different types of tissues and structures and their role in health and disease and physical mobility. By analyzing new image data from FHS participants of different ages, sizes and shapes, much more can be learned.

Platelets

are tiny sticky cells that help form clots and prevent bleeding when we have cuts. They also help form clots inside the blood vessels in the body. Excessive stickiness or higher numbers of platelets can result in clot formation with consequences for interruption of blood supply for organs, including the heart and the brain. Dr. Andrew Johnson's Lab at FHS is **conducting one of the most comprehensive study of platelet functions in human populations**, embedded within the FHS exam. This study samples how individual peoples' platelets differ in their formation of blood clots. Five different technologies are used daily to test the platelets, resulting in an unprecedented wealth of platelet biomarker data. One of the technologies allows the researchers to visualize and measure platelet clot formation in real time movies within a simulated blood vessel with flowing blood. The new data are providing insights into how these platelet biomarkers relate to cardiovascular disease and to clinical bleeding history. Additionally, the **discovery of genes that influence platelet functions in humans** could lead to new potential drug targets for preventing and treating cardiovascular disease.

Brain Imaging, Health Information Updates, Genetics and Tissue Repository

Modern computing hardware, software and new statistical models enable the analysis of enormous amounts of data as never before. So at FHS, information from multiple kinds of hi-tech tests can be studied together. A great example of effective use of multi-tech data is in FHS research on brain health and disease. Data is being obtained from FHS MRI brain images, CPET scans, cognition interview results, medical records updates, FHS stroke records, genetic studies and, in some cases, from FHS Brain Bank pathology studies. Together they enrich the opportunities to learn more about brain function.

Induced Pluripotent Stem Cells (iPSC)

Another hi-tech laboratory process is being done now at FHS. A sample of white cells are collected in special tubes so they can be transferred to the iPSC lab at BU and eventually transformed at a later date into cells that have the characteristics of other kinds of tissue cells. These transformed cells become a resource for studying the behavior of various cell types, such as how liver cells function. The frozen cells can be stored for a long time and can be used to answer new health related research questions as they arise.

Traumatic Brain Injury Survey (TBI)

To add to the information about brain health and disease, a survey has been designed with questions about participants' histories of major and minor brain injury. The survey can be completed at home by computer link or on paper forms.

Arterial Tonometry

Specialized equipment now at FHS enables measurement of the blood vessel waveform at the carotid, aorta, brachial and femoral artery sites. By comparing new Exam 3 measurements with the Exam 2 study of blood vessel stiffness, investigators will be able to track change in blood vessel stiffness with age. From this study the identification of the associated risk factors and disease outcomes related to heart, lungs, brain, and the kidneys can be made.

Important new FHS research findings are being published every month in leading journals

See postings on the FHS website at

<https://www.framinghamheartstudy.org/fhs-bibliography/>.

The generous contributions of each FHS participant to all the components of the study directly improve the quality of the research.

Trustees of Boston University
National Heart, Lung, and Blood Institute
Framingham Heart Study

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Framingham, MA 01702

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www.framinghamheartstudy.org

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Last Chance - Please Call!

Volunteering for a 4.5 hour research exam is not an easy thing to do! We understand that it's a big commitment – but what is hard for us is that we can't go to anyone else BUT YOU. The clock is ticking on this Exam and we only have a few months left to see you.

Tell us how we can help!

- Early appointments available
- Later appointments available
- Saturday appointments



Without you, there will be missing data, and less powerful research for new science...
Please call or text today.



How have you been lately?

Let FHS know by returning your Medical History Update (MHU). **Soon it will be even easier via an email survey.** We will be sending emails with the MHU survey to FHS participants for whom we have active email addresses and who are due for their annual survey. You will still have the option of completing the paper version.

We will reach out to you, and you can pick your preferred way to respond.

CONTACT US

FHS Receptionist Desk

(508) 872-6562 or (800) 854-7582

**Brain Donation, Brain MRI,
Cognitive Testing, Stroke Coordinator
Linda Farese**

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or lfarese@bu.edu

**Participant Coordinator
Maureen Valentino**

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or maureenv@bu.edu
or text to (857) 324-0394

**Omni Coordinator
Paulina Drummond**

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